

## REMARKS

The specification has been amended to correct typographical errors. Claims 1-34 are pending in the present application, and claims 1-26 have been withdrawn from consideration. Claims 35-37 have been added, and no claims have been canceled, leaving claims 27-37 for consideration upon entry of the present Amendment. Reconsideration and allowance of the claims are respectfully requested in view of the following remarks.

Claim 27 has been amended to include the feature that the system is configured to combine the dissolved chlorine-containing material feedstream with a chlorous acid feedstream produced by the electrochemical acidification cell. Support for this amendment can be found in paragraph 61, the first sentence, of the originally filed specification and in Fig. 8 of the originally filed drawings.

Claims 30-34 have been amended to correct typographical errors.

Claim 35 has been added to recite that a pressure drop across the vessel is about 1 to about 40 pounds per square inch. Support for this amendment can be found in paragraph 33 of the originally filed specification.

Claim 36 has been added to recite that the central compartment further comprises a catalyst material. Support for this amendment can at least be found in paragraph 39 of the originally filed specification.

Claim 37 has been added to recite that a solid fraction of the solid phase chlorine-containing material in the vessel is about 40 to about 90 volume by volume %. Support for this amendment can be found in paragraph 33 of the originally filed specification.

Accordingly, no new matter has been introduced by these amendments. Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Election/Restriction Requirement

In a telephone conversation with the Examiner on March 20, 2207, Applicant provisionally elected with traverse to prosecute the invention of group I (process of making chlorine dioxide), species (b) (series generation of streams to a mixer), as provided in claims 27-34. Applicant hereby affirms this election made with traverse to prosecute the invention of claims 27-34. Applicant believes that claims 20-26 are a generic version of claims 27-34 since the electrochemical acidification cell in claim 27 is a species of (or an example of) the first apparatus in claim 20. Also, Applicant asserts that claims 27-34 do not indicate whether the feedstreams are fed in parallel or in series. Thus, Applicant does not agree with the species identified by the Examiner with respect to claims 27-34 and request the Examiner to reconsider the species restriction. Claims 1-26 have been withdrawn as being drawn to a non-elected invention.

Claim Objections

Claims 30-34 have been objected to as having informalities. To correct these informalities, claims 30-34 have been amended to recite “[t]he system according to claim 27” rather than “[t]he process according to claim 27”. Accordingly, Applicants respectfully request removal of these objections to claims 30-34.

35 U.S.C. § 103(a) Rejections

Claims 27-34 have been rejected under 35 U.S.C. § 103(a), as allegedly being unpatentable over GB Patent No. 2,263,108 to Imrie et al. (hereinafter “Imrie”) in view of U.S. Patent No. 6,203,688 to Lipsztajn et al (hereinafter “Lipsztajn”) with reference to U.S. Patent No. 5,106,465 to Kaczur et al. (hereinafter “Kaczur”) and U.S. Patent No. 6,413,416 to Buchan (hereinafter “Buchan”). Applicants respectfully traverse these rejections.

The Supreme Court addressed the issue of obviousness in *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007). The Court found that the factors set forth in *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966), still define the controlling inquiry as to

whether claimed subject matter is obvious. *KSR*, 127 S. Ct. at 1734. The “Graham” factors are as follows: 1) “the scope and content of the prior art”; 2) the “differences between the prior art and the claims”; 3) “the level of ordinary skill in the pertinent art”; and 4) “[s]uch secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc.” *Id.* (quoting *Graham*, 383 U.S. at 17-18).

It has long been recognized that establishing a *prima facie* obviousness requires that all elements of the invention be disclosed in the prior art. *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970). In *KSR*, the Supreme Court also indicated that it remains legally insufficient to conclude that a claim is obvious “merely by demonstrating that each element was, independently, known in the prior art.” *KSR*, 127 S. Ct. at 1731. The Court further stated that it is important for the Examiner to “identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *Id.* at 1731. The Court also indicated that “this analysis should be made explicit.” *Id.*

Among other things, independent claim 27 is limited to a system for producing chlorine dioxide comprising a vessel partially filled with water, a cartridge having a lower portion with openings in fluid communication with the water, and a solid phase chlorine-containing material disposed within the cartridge such that a portion of it is submerged in the water to produce a dissolved chlorine-containing feedstream from the vessel outlet, wherein the system is configured to combine the dissolved chlorine-containing material feedstream with a chlorous acid feedstream produced by an electrochemical acidification cell. Fig. 8 of the present Application schematically illustrates an embodiment of the system of claim 27. The primary reference relied on by the Examiner, i.e., Imrie, describes passing a solution of sodium chlorite or sodium chlorate through a vessel containing an active halogen source such as chlorine-release tablets to produce chlorine dioxide by reaction therein (see, e.g., Imrie – page 1, the last paragraph (para.) to page 2, the 1<sup>st</sup> para.). Thus, the chlorine-release tablets in Imrie are disposed in a reaction vessel through which the sodium chlorite/chlorate solution passes as opposed to in a separate cartridge having openings in its lower portion for allowing water to enter the cartridge to produce a dissolved chlorine-containing material feedstream. Further, Imrie fails to teach or suggest that its system is configured to combine a dissolved

chlorine-containing material feedstream with a separately produced chlorous acid feedstream. Instead, Imrie's system uses a single reaction vessel to produce chlorine dioxide from a single feedstream and thus avoids the problems disclosed in Imrie as being associated with handling two or more feedstreams (Imrie – page 1, the 5<sup>th</sup> para.).

Neither Lipsztajn nor Kaczur, which relate to producing an aqueous solution of chlorine dioxide using an electrochemical cell (see, e.g., the Abstracts of Lipsztajn and Kaczur), remedies these deficiencies of Imrie. In particular, Lipsztajn and Kaczur in no way suggest using a separate cartridge for dissolving a solid phase chlorine-containing material in water or combining the dissolved chlorine-containing material with a separately produced chlorous acid feedstream.

The Examiner relies on Buchan as teaching what Imrie lacks. Buchan discloses a water treatment vessel and a cartridge protruding into the vessel for holding water treatment tablets, e.g., calcium hypochlorite tablets, to be dissolved by the water in the vessel. (see, e.g., Imrie – column 9, lines 51- 65 column 10, lines 30-33). However, Buchan fails to teach or suggest a configuration for combining the dissolved chlorine-containing stream formed in the vessel disclosed therein with a separately produced chlorous acid feedstream.

In addition, Applicants respectfully disagree with the Examiner's contention that it would have been obvious to one of ordinary skill in the art to have substituted the dissolver of Buchan for the tower of Imrie since the dissolver of Buchan includes means for making sure that the water is in constant contact with the solid phase chlorine-containing material. Imrie already provides means for allowing the solid halogen source tablets described therein to remain in constant contact with the aqueous medium. In particular, Imrie describes packing the solid tablets in the tower and flowing the aqueous medium through the tower (Imrie – page 2, last para.), which would obviously keep the solid tablets and aqueous medium in contact with each other. Thus, there would be no motivation for a person of ordinary skill in the art to exchange the tower of Imrie with the dissolver of Buchan since the tower is already effective at maintaining contact between the tablets and the aqueous medium flowing therethrough.

In view of the foregoing, the Examiner has failed to establish a case of *prima facie* obviousness with respect to independent claim 27 and dependent claims 28-34, which depend therefrom. Applicant therefore respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of these claims.

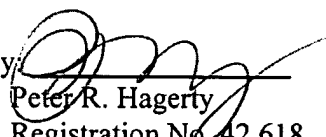
New Claims

Applicants assert that currently added dependent claims 35-37 are distinctly patentable over the cited art for the following reasons. Neither Imrie, Lipsztajn, Kaczu, nor Buchan teaches or suggests a pressure drop across a vessel of about 1 to about 40 pounds per square inch, as recited in claim 35, or a solid fraction of a solid phase in a vessel of about 40 to about 90 volume by volume %, as recited in claim 37. These references also fail to teach or suggest that a central compartment of an electrochemical acidification cell comprises a catalyst material in addition to a cation exchange material, which is a limitation of claim 36.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance of the case are respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,  
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